



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,526	02/24/2005	Ryo Motohashi	P26642	7035
7055	7590	04/19/2007		
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER GUIDOTTI, LAURA COLE	
			ART UNIT	PAPER NUMBER
			1744	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/19/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/19/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/525,526	MOTOHASHI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Laura C. Guidotti	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 14-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-3, 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiedemann et al., US 5,448,792 in view of Kofink, DE 29 06 404 (see English translation).

Wiedemann et al. disclose a power toothbrush comprising a brush head (5) and an actuator for moving the brush head (entirety shown in Figure 3) for reciprocally moving a brush head in a linear direction of a longitudinal axis (8; Figures 1-2) and in a rotary direction about a longitudinal axis (9; Figures 1-2) in order to thoroughly loosen and wipe tooth surfaces (Column 2 Lines 5-17, 42-50). The brush head (5) is fitted to a drive shaft (3). Wiedemann et al. does not disclose that the actuator includes a first or second magnetic circuit.

Kofink teaches an actuator that has a drive shaft (4), a first magnetic circuit for reciprocally moving the drive shaft in an axial direction thereof (at 11, formed by stators 8, coils 13, grooves 14), and a second magnetic circuit for reciprocally rotating the drive shaft around the center thereof (at 9, formed by stators 7 and unlabeled coils), the first magnetic circuit and the second magnetic circuit directly move the drive shaft (see directional arrows in the Figure and Abstract), the first magnetic circuit (at 11) further comprises a first permanent magnet unit fixed to the drive shaft (12; Abstract), a pair of first stators (8) and a pair of first windings respectively wound around the first stators

Art Unit: 1744

(13), the second magnetic circuit further comprises a second permanent magnet unit fixed on the drive shaft (10), a pair of second stators (7) and two pairs of second windings wound around poles of the second stator (as it appears in the Figure that each stator has a winding wound twice, or a pair of windings on each stator), the first permanent magnet unit is linearly moved in the axial direction of the drive shaft while a driving current is supplied to the first windings (Figure, directional arrow, Abstract) and the second permanent magnet unit is rotated around the center axis of the drive shaft while a driving current is supplied to the second windings (Figure, directional arrow, Abstract), and a pair of coil springs which are capable of applying pressing forces to position the first permanent magnet unit and the second permanent magnet unit at initial positions while the actuator is not activated (see English translation, Page 4 Lines 22-24 describes "springs that are supported on mounting points...", Page 6 Lines 16-18 describes one spring 17 that is shown in the Figure). Regarding claim 2, the first magnetic circuit and the second magnetic circuit are capable of being activated simultaneously (see English translation, Page 6 Lines 8-15). Regarding claim 3, the first magnetic circuit and the second magnetic circuit can be activated (activated via circuitry, see Figure). Regarding claims 14-15, the first and second magnetic circuits (at 9 and at 11) is periodically driven by switching on an off of supplying driving current (as the current is alternating current, see English translation Page 4 Lines 10-18, Page 6 Lines 21-26), and the reciprocal movement of the drive shaft is sustained owing to sympathetic vibrations of the coil springs while the driving current is not supplied to the

Art Unit: 1744

circuit (paragraphs 35-36, 38). It is particularly noted that the actuator of Kofink is for toothbrushes (see English translation, Page 5 Line 8).

It would have been obvious for one of ordinary skill in the art to substitute the entire actuator system of Wiedemann et al. for one that has an actuator system that has first and second magnetic circuits, as Kofink teaches, in order to provide reciprocal motion in both a linear and rotary direction.

2. Claims 4-11 and 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiedemann et al., US 5,448,792 in view of Kofink, DE 29 06 404 (see English translation) as applied to claim 1, in view of Li, US 6,429,611.

Wiedemann et al. and Kofink disclose all elements mentioned above. The actuator of Kofink further includes sensors (14, 15, 16) and that the electric current is supply is programmable to that the speed and stroke can be regulated via electronic controls or control system (see English translation Page 6 Lines 1-15, Page 4 Line 10 to Page 5 Line 8). Wiedemann et al. and Kofink do not include an inverter.

Li teaches a rotary and linear motor that also uses sensors (32) and (34) to indicate a linear displacement or a rotary angle of a rotor (12) and feeds this data back to motor control algorithms (Column 4 Lines 3-6). Li further teaches the use of an inverter (26) capable of generating currents having predetermined frequencies and a phase difference therebetween wherein the phase difference is capable of being zero (or "in phase"), and supplied to the first magnetic circuit and a second magnetic circuit (there are three magnetic circuits 18a-18c; Column 3 Lines 58 to Column 4 Line 3,

Art Unit: 1744

Column 4 Lines 7-58). Regarding claim 5, the driving currents are inherently alternating currents (AC) as "an inverter" by definition is "a device used to convert direct current into alternating current" (*The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2000 by Houghton Mifflin Company.*) Regarding claim 6, the frequencies and/or phase difference between the currents are capable of being adjustable (via altering a software program, Column 4 Line 59 to Column 5 Line 15), and by being adjustable are capable of having specific phase differences or frequencies that are integral multiples thereof or the ratio of frequencies not being an integer.

It would have been obvious for one of ordinary skill in the art to modify the control system of the actuator of Wiedemann et al. and Kofink, to include an inverter, as Li teaches, in order to responsively control the driving currents supplied to the circuits.

### ***Response to Arguments***

3. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

As indicated above, the English translation of Kofink, DE 29 06 404 has now been made available to the Examiner and is provided to the Applicant. The English translation further supports the Examiner's position, and additionally includes other limitations not previously recognized by the Examiner.

### ***Conclusion***


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura C. Guidotti whose telephone number is (571) 272-

Art Unit: 1744

1272. The examiner can normally be reached on Monday-Thursday, 7:30am - 5pm, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on (571) 272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Laura C Guidotti  
Patent Examiner  
Art Unit 1744

lcg